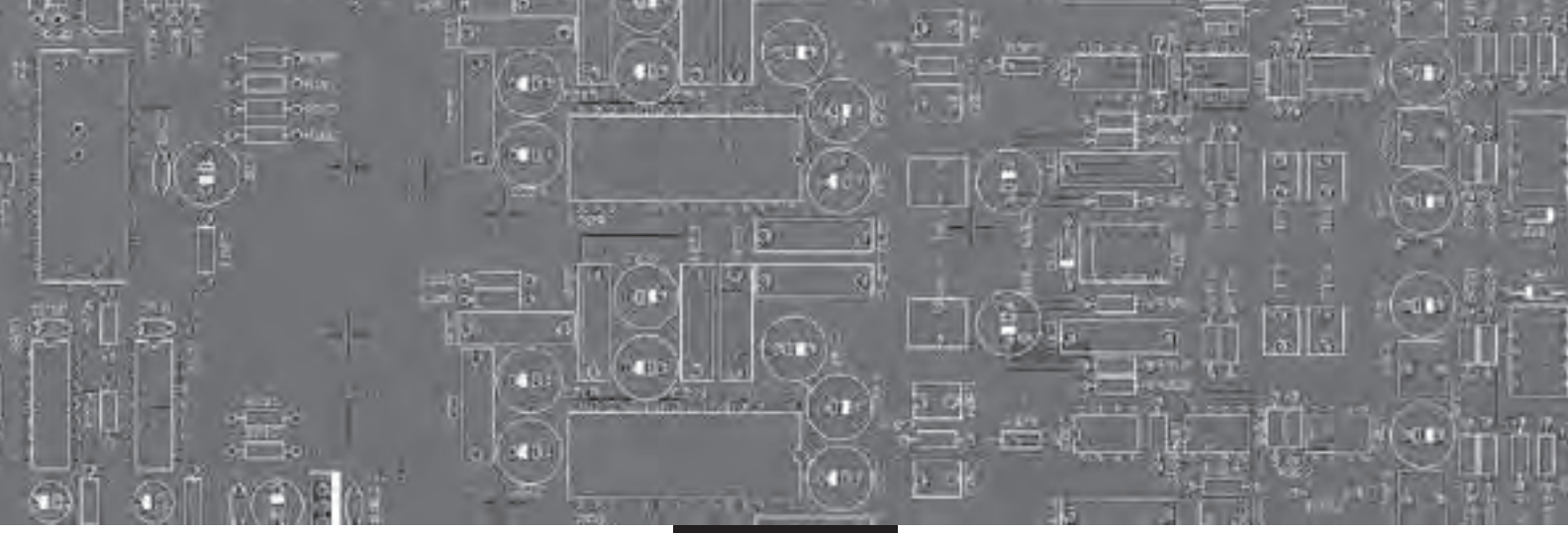


ROTEL®

Owner's manual

RKB-250

Power Amplifier

CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is to alert the user to the presence of uninsulated dangerous voltages inside the product's enclosure that may constitute a risk of electric shock.

This symbol is to alert the user to important operating and maintenance (service) instructions in this manual and literature accompanying the product.

APPLICABLE FOR USA, CANADA OR WHERE APPROVED FOR THE USAGE

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT. INSERT FULLY.

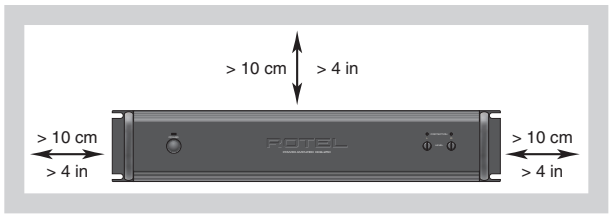
ATTENTION: POUR EVITER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU AU FOND.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This symbol means that this unit is double insulated. An earth or ground connection is not required.

CE



Important Safety Instructions

WARNING: There are no user serviceable parts inside. Refer all servicing to qualified service personnel.

WARNING: To reduce the risk of fire or electric shock, do not expose the unit to moisture or water. Do not expose the unit to dripping or splashing. Do not place objects filled with liquids, such as vases, on the unit. Do not allow foreign objects to get into the enclosure. If the unit is exposed to moisture, or a foreign object gets into the enclosure, immediately disconnect the power cord from the wall. Take the unit to a qualified service person for inspection and necessary repairs.

Read all the instructions before connecting or operating the component.

Keep this manual so you can refer to these safety instructions.

Heed all warnings and safety information in these instructions and on the product itself. Follow all operating instructions.

Clean the enclosure only with a dry cloth or a vacuum cleaner.

Do not use this unit near water.

You must allow a minimum 10 cm or 4 inches of unobstructed clearance around the unit. Do not place the unit on a bed, sofa, rug, or similar surface that could block the ventilation openings. If the unit is placed in a bookcase or cabinet, there must be ventilation of the cabinet to allow proper cooling.

Keep the component away from radiators, heat registers, stoves, or any other appliance that produces heat.

The unit must be connected to a power supply only of the type and voltage specified on the rear panel. (USA: 120 V/60Hz, EC: 230V/50Hz)

Connect the component to the power outlet only with the supplied power supply cable or an exact equivalent. Do not modify the supplied cable. A polarized plug has two blades, with one wider than the other. A grounding plug has two blades plus a third grounding prong. These are provided for your safety. Do not defeat grounding and/or polarization safety provisions. If the supplied plug does not fit your outlet, please consult an electrician for replacement of the obsolete outlet. Do not use extension cords.

The main plug of the power cordset is a disconnect device of the apparatus. In order to completely disconnect the apparatus from the supply mains, the main plug of the power cordset should be unplugged from the mains (AC) outlet. The stand-by LED indicator will not be lit up to show the power cord is unplugged.

Do not route the power cord where it will be crushed, pinched, bent, exposed to heat, or damaged in any way. Pay particular attention to the power cord at the plug and where the cord exits the back of the unit.

The power cord should be unplugged from the wall outlet during a lightning storm or if the unit is to be left unused for a long period of time.

Use only accessories specified by the manufacturer.

Use only with a cart, stand, rack, bracket or shelf system recommended by Rotel. Use caution when moving the unit in a stand or rack to avoid injury from a tip-over.

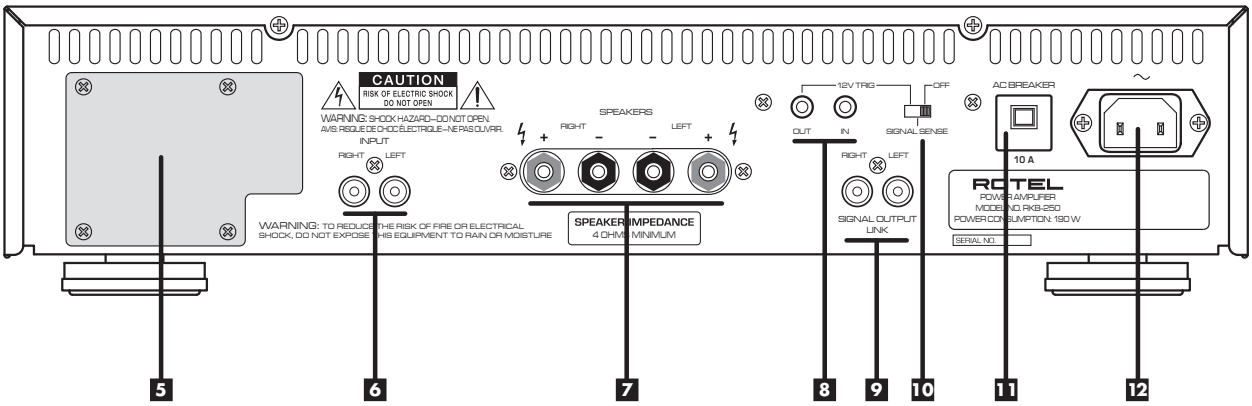
Use Class 2 wiring for speaker connections to ensure proper installation and minimize the risk of electrical shock.

Immediately stop using the component and have it inspected and/or serviced by a qualified service agency if:

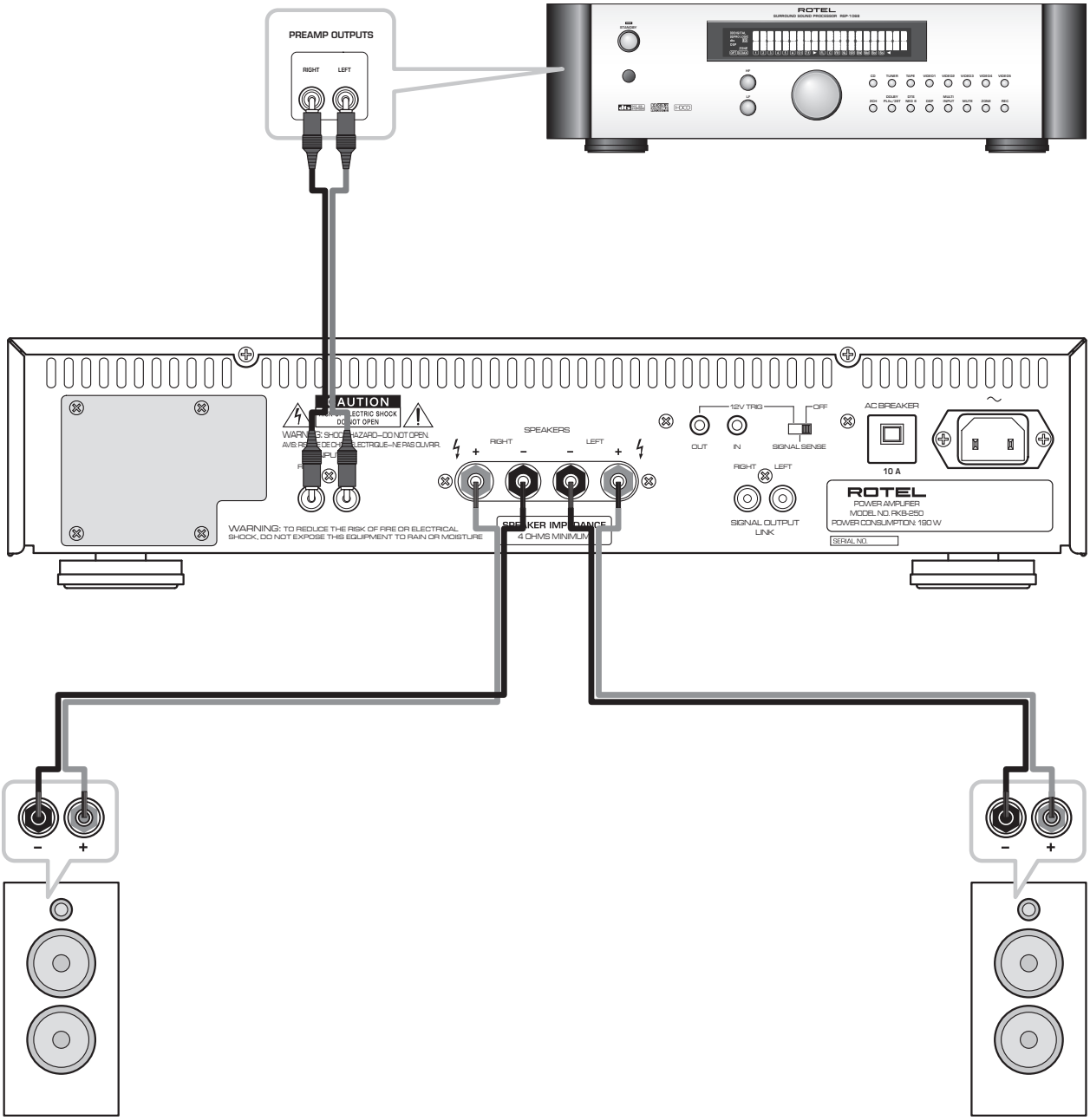
- The power supply cord or plug has been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit shows signs of improper operation
- The unit has been dropped or damaged in any way

WARNING: The master power switch is located on the rear panel. The unit must be located in the open area allowing unobstructed access to the main power switch.

1: Controls and Connections



2: Hook-up Illustration



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About Rotel

A family whose passionate interest in music led them to manufacture high fidelity components of uncompromising quality founded Rotel over 40 years ago. Over the years that passion has remained undiminished and the goal of providing exceptional value for audiophiles and music lovers regardless of their budget, is shared by all Rotel employees.

The engineers work as a close team, listening to, and fine tuning each new product until it reaches their exacting musical standards. They are free to choose components from around the world in order to make that product the best they can. You are likely to find capacitors from the United Kingdom and Germany, semiconductors from Japan or the United States, and toroidal power transformers manufactured in Rotel's own factory.

Rotel's reputation for excellence has been earned through hundreds of good reviews and awards from the most respected reviewers in the industry, who listen to music every day. Their comments keep the company true to its goal – the pursuit of equipment that is musical, reliable and affordable.

All of us at Rotel thank you for buying this product and hope it will bring you many hours of enjoyment.

Getting Started

Thank you for purchasing the Rotel RKB-250 Stereo Power Amplifier. When used in a high-quality music or home theater system, your Rotel amplifier will provide years of musical enjoyment.

The RKB-250 is a sophisticated two-channel power amplifier. Discrete output devices, a massive power supply with toroidal transformer, premium components, and Rotel's Balanced Design ensure superb sound quality. High current capability allows the RKB-250 to drive difficult speaker loads with ease.

Features

- Two-channel power amplifier, with 50 watts per channel output into 8 ohms.
- Rack-mountable (standard international 2U rack height). Rack handles or the rack mount kit can be removed for installation in narrower spaces.
- Front panel input level controls. Can be configured three ways: recessed adjustments, knobs for user control, or covered with blanking plugs to prevent user adjustment.
- User-selectable power on/off configuration: manual, automatic signal sensing, or controlled by remote 12 volt trigger signal.
- Provision for installation of optional cooling fan for increased heat dissipation and performance.
- Protection circuitry against fault conditions with front panel indicators

A Few Precautions

Please read this manual carefully. In addition to basic installation and operating instructions, it provides valuable information on various RKB-250 system configurations as well as general information that will help you get optimum performance from your system. Please contact your authorized Rotel dealer for answers to any questions you might have. In addition, all of us at Rotel welcome your questions and comments.

Save the RKB-250 shipping carton and all enclosed packing material for future use. Shipping or moving the RKB-250 in anything other than the original packing material may result in severe damage to your amplifier.

Keep the original sales receipt. It is your best record of the date of purchase, which you will need in the event warranty service is ever required.

Placement

The amplifier can be mounted in a standard equipment rack or placed on a solid surface.

When not using an equipment rack, place the RKB-250 on a solid, level surface away from sunlight, heat, moisture, or vibration. Don't stack other components or objects on top of the RKB-250. Don't let any liquid fall into the unit.

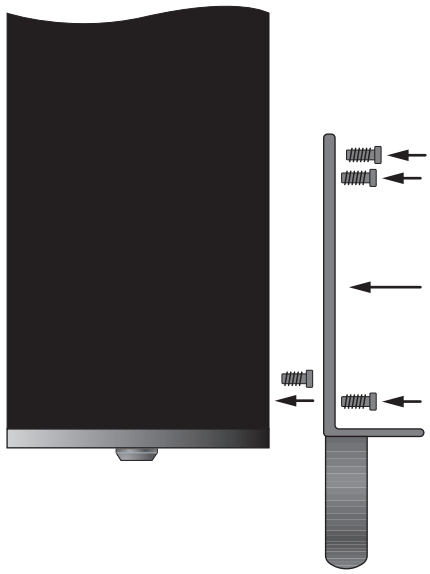
Likewise, remember the weight of the amplifier when you select an installation location. Make sure that the shelf or cabinet can support its considerable bulk.

The RKB-250 generates heat during normal operation. Do not block ventilation openings. **Allow a minimum of 10 cm or 4 inches of unobstructed space around the unit.** If installed in a cabinet, make sure that there is adequate ventilation.

Rack Mounting

The RKB-250 is supplied with two rack mounting brackets for installation in standard equipment racks. To install these brackets:

1. Hold a bracket against the side of the amplifier to locate the chassis cover screw that must be removed for clearance. Remove this screw with a Phillips head screw driver and replace it with one of the short Philips head machine screws enclosed with the brackets.
2. Install the rack mount bracket, inserting three of the long Philips head machine screws through the bracket and into the threaded holes in the side of the amplifier.
3. Repeat for the bracket on the other side of the amplifier.

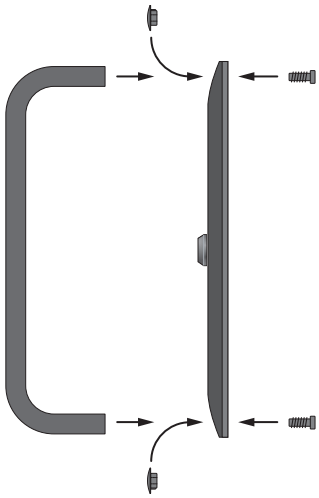


NOTE: *You can remove the feet from the bottom of the amplifier if necessary for clearance in the rack. Save the feet and hardware for future use.*

After the adaptors are installed, use four bolts supplied with your equipment rack to mount the amplifier. Be sure that all four bolts are tightened properly.

Rack Handles

The rack mount brackets are supplied with handles which can be installed or removed. The handles are installed with two of the long Philips head machine screws inserted through the rack mount bracket and into the threaded holes in the handle. If you do remove the handles, use the rubber hole plugs supplied with the bracket hardware to fill the exposed holes.



Optional Fan Kit 5

The RKB-250's generous heatsinks provide adequate cooling for most installations. However, when rack mounting or otherwise installing the amplifier in a confined space near other heat-generating components, additional cooling may be desirable. The optional RKBF-2 fan kit can be easily installed for additional forced air cooling. In addition to lowering operating temperatures, the optional fan kit improves the performance of the amplifier, especially when driving difficult loudspeaker loads. See your Rotel dealer for information on the optional fan kit.

NOTE: *The optional cooling kit generates mechanical fan noise during operation. When using the fan cooling, select a location for the amplifier where the noise will not be intrusive.*

AC Power and Control

AC Power Input 12

Your RKB-250 is configured at the factory for the proper AC line voltage in the country where you purchased it (USA: 120 volts/60 Hz, Europe: 230 volts/50 Hz). The AC line configuration is noted on a label on the back panel.

The RKB-250 is supplied with the proper AC power cord. Use only this cord or an exact equivalent. Do not modify the supplied cord. Do not use an extension cord.

Be sure the power switch on the front panel of the RKB-250 is turned off. Then, plug one end of the cord into the AC power connector on the back panel of the amplifier. Plug the other end into an appropriate AC outlet.

If you are going to be away from home for an extended period of time, it is a sensible precaution to unplug your amplifier.

Power Switch 1
Indicator LED 2

The power switch is located on the left side of the front panel. To turn the amplifier on (or to activate either of the optional automatic power-on modes), push the switch in. The LED indicator above the switch will light, indicating that the amplifier is turned on. To turn the amplifier off, push the button again and return it to the out position.

Auto Turn On/Off Mode Selector 10

The RKB-250 provides three different options for manual or automatic power on/off operation. These modes are selectable using a three-position slide switch on the back panel as follows:

- **With the switch in the OFF position,** the amplifier is turned on or off manually using the front panel power switch. Also use this mode if you are using a switched AC outlet to control power to the amplifier.
- **With the switch in the SIGNAL SENSE position,** the amplifier turns on automatically when a signal is detected at the inputs. The amplifier will go into standby mode several minutes after no signal is no longer present. The front panel power switch overrides this function. It must be ON for the signal sensing to work. Turning the switch OFF cuts power to the amplifier, regardless of whether or not a signal is present.
- **With the switch in the 12V TRIG position,** the amplifier is turned on automatically when a 12 volt trigger signal is present at the 12V TRIG input to the left of the switch. The amplifier goes into standby mode if the +12 volt signal is not present. The front panel POWER SWITCH overrides this function. It must be ON for the +12V trigger to work. Turning the switch OFF cuts power to the amplifier, regardless of whether or not a trigger signal is present.

12V Trigger Input 8

An input jack for connecting the wires carrying a +12 volt trigger signal from a Rotel preamp or surround sound processor to turn the amplifier on and off. To use this feature the adjacent slide switch must be placed to the left position (see previous section).

The TRIGGER INPUT accepts any control signal (AC or DC) ranging from 3 volts to 30 volts. Using a cable with mono 3.5 mm mini-plugs on both ends. The +12 V DC signal appears at the "tip" connector.

12V Trigger Output 8

The 12V TRIG jack labeled OUT is used to pass the remote turn-on signal to a second Rotel amplifier. Any 12V Trigger signal at the INPUT jack will be passed through to the OUT jack.

Circuit Breaker 11

A 10 amp circuit breaker on the rear panel protects the amplifier's electrical circuity. Generally, the circuit breaker will only open under a fault condition which results in excessive current draw. To reset the circuit breaker, press the button. Should it repeatedly open, contact your authorized Rotel dealer for troubleshooting assistance.

Protection Indicators 3

A thermal protection circuit protects the amplifier against potential damage in the event of extreme or faulty operating conditions. Unlike many designs, the RKB-250's protection circuit is independent of the audio signal and has

no impact on sonic performance. Instead, the protection circuit monitors the temperature of the output devices and shuts down the amplifier if temperatures exceed safe limits.

In addition, the RKB-250 includes overcurrent protection which operates only when load impedance drops too low.

Should a faulty condition arise, the amplifier will stop playing and one or both of the PROTECTION LEDS on the front panel will light indicating a fault with the left and/or right channels.

If this happens, turn the amplifier off, let it cool down for several minutes, and attempt to identify and correct the problem. When you turn the amplifier back on, the protection circuit will automatically reset and the PROTECTION LEDS should go out.

In most cases, the protection circuitry activates because of a fault condition such as shorted speaker wires, or inadequate ventilation leading to an overheating condition. In very rare cases, highly reactive or extremely low impedance speaker loads could cause the protection circuit to engage.

Signal Connections

The RKB-250 provides standard conventional input connections — unbalanced RCA type connections as found on nearly all audio equipment. In addition, there is a pair of SIGNAL OUTPUT LINK connections for passing the unchanged input signal on to another audio component.

RCA Inputs 6

See Figure 2

These RCA inputs accept audio signals from preamplifiers or surround sound processors. Use high quality audio interconnect cables for best performance.

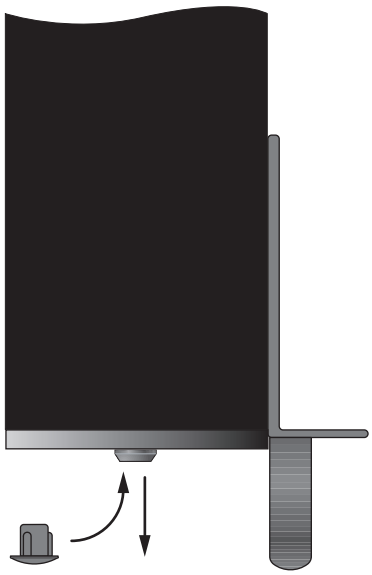
Connect the left channel output of your preamp to the LEFT INPUT on the RKB-250. Connect the right channel of your preamp to the RIGHT INPUT.

Input Level Controls 4

Two controls on the front panel, one for each channel, provide input level adjustments. These allow you to adjust the gain of the amplifier to match other components in the system. The L level control changes the gain of the left channel; the R level control changes the right channel.

To adjust these controls, use a small, flat-blade screwdriver. Turn the control clockwise to increase gain. Turn counterclockwise to reduce gain.

For easier adjustment, install the supplied volume control knobs by gently pressing them onto the control shafts. Alternatively, you can prevent inadvertant adjustment by installing the supplied rubber plugs to conceal the volume controls.



Signal Output Link 9

This pair of RCA connections can be used to pass the unprocessed input signals to another audio component, for example to "daisy-chain" an additional amplifier to drive a second set of speakers. Any INPUT SIGNAL is also available at these LINK outputs.

Speakers

The RKB-250 has two pair of speaker connectors, one pair for each channel.

Speaker Selection

The nominal impedance of the loudspeaker(s) connected to the RKB-250 should be a minimum of 4 ohms. When driving multiple pairs of speakers connected in parallel, the effective impedance the amplifier sees is cut in half. For example, when driving two pair of 8 ohm speakers, the amplifier sees a 4 ohm load. When driving multiple speakers in parallel, select speakers with a nominal impedance of 8 ohms or higher.

Speaker Wire Selection

Use insulated two-conductor stranded wire to connect the RKB-250 to the speakers. The size and quality of the wire can have an audible effect on the performance of the system. Standard speaker wire will work, but can result in lower output or diminished bass response, particularly over longer distances. In general, heavier wire will improve the sound. For best performance, you may want to consider special high-quality speaker cables. Your authorized Rotel dealer can help in the selection of appropriate cables for your system.

Polarity and Phasing

The polarity or positive/negative orientation of the connections for every speaker and amplifier connection must be consistent so all the speakers will be in phase. If the polarity of one connection is mistakenly reversed, bass output will be very weak and stereo imaging degraded. All speaker wire is marked so you can identify the two conductors. There may be ribs or a stripe on the insulation of one conductor. The wire may have clear insulation with different color conductors (copper and silver). There may be polarity indications printed on the insulation. Identify the positive and negative conductors and be consistent with every speaker and amplifier connection.

Speaker Connections 7

See Figure 2

The RKB-250 has one pair of color coded connections per channel. Labels above the connectors show the proper connections. These speaker connectors accept bare wire, connector lugs, or "banana" type connectors (except in the European Community countries where their use is not permitted).

Route the wires from the RKB-250 to the speakers. Give yourself enough slack so you can move the components enough to allow access to the speaker connectors.

If you are using banana plugs, connect them to the wires and then plug into the backs of the speaker connectors. The collars of the speaker connectors should be screwed in all the way (clockwise).

If you are using terminal lugs, connect them to the wires. If you are attaching bare wires directly to the speaker connectors, separate the wire conductors and strip back the insulation from the end of each conductor. Be careful not to cut into the wire strands. Unscrew (turn counterclockwise) the speaker connector collar. Place the connector lug around the shaft, or insert the bundled wire into the hole in the shaft. Turn the collars clockwise to clamp the connector lug or wire firmly in place.

NOTE: *Be sure there are no loose wire strands that could touch adjacent wires or connectors.*

Connect the left speaker to the pair of speaker connectors labeled LEFT. Connect the right speaker to the speaker connectors labeled RIGHT. Follow the labels printed above the connectors, Make sure that the positive terminal of the speaker is connected to the + terminal on the amplifier. Make sure that the negative terminal of the speaker is connected to the – terminal of the amplifier.

Troubleshooting

Most difficulties in audio systems are the result of poor or wrong connections, or improper control settings. If you encounter problems, isolate the area of the difficulty, check the control settings, determine the cause of the fault and make the necessary changes. If you are unable to get sound from the RKB-250, refer to the suggestions for the following conditions:

Front Panel Power Indicator Is Not Lit

No main power to the RKB-250. Check AC power connections at the amplifier and the AC outlet. Check the front panel power switch. Make sure that it is set to the ON position. If using signal sensing auto power-on, make sure that a signal is present at the inputs. If using 12V trigger power-on, make sure that a trigger signal is present at rear panel +12V connection.

No Sound

If the amp is getting AC power, but is producing no sound, check the PROTECTION INDICATORS on the front panel. If lit, see below. If not, check all of your connections and control settings on associated components. Make sure that your input connections and speaker connections match your selected stereo/mono configuration.

Protection Indicators are Lit

The front panel PROTECTION INDICATORS light when the RKB-250 protection circuits have shut off the amplifier. Typically, this occurs only when the ventilation openings are blocked, when there is faulty speaker wiring, or after a period of extreme use. Turn off the system and wait for the amp to cool. Then push the front panel power switch in and out to reset the protection devices. If the problem is not corrected or reoccurs, there is a problem with the system or the amplifier itself.

Specifications

Continuous Power Output into 8 ohms (20-20k Hz, < 0.03% THD)
50 watts/ch into 8 ohms, all channels driven

Continuous Power Output into 4 ohms (DIN 1 kHz,1.0% THD)
90 watts/ch into 4 ohms, all channels driven

Total Harmonic Distortion (20Hz-20kHz, 8 ohms)
Continuous rated power: < 0.03%
One-half rated power: < 0.03%
1 watt power: < 0.03%

Intermodulation Distortion (60 Hz : 7 kHz, 4:1)
< 0.03%

Damping Factor (20-20,000 Hz, 8 ohms)
>200

Input Impedance
20 k Ohms

Input Sensitivity
1.0 volt

Amplifier Gain:
26 dB

Input Overload Level
5.0 volt

Peak Current
> 25 A

Frequency Response (±1 dB)
10Hz-100kHz

S/N Ratio (IHF A)
115 dB

Crosstalk/Separation
> 70 dB

Speaker Impedance
4 ohms minimum

Auto Turn On Level (with all inputs)
3 mV input signal

Power Requirements
USA: 120 Volts, 60 Hz
Europe: 230 Volts, 50 Hz

Power Consumption
190 Watts
Idle: 22 Watts
Standby: 2.3 Watts

Dimensions (W x H x D) (not including rack adaptors)
430 x 100 x 322 mm
16.9 x 3.9 x 12.7 in

Weight (net)
8 kg, 17.6 lb.

Panel Height
2U, 88.1 mm/3.5 in

When sizing openings in custom cabinets, measure the unit to be installed and/or allow at least 1 mm clearance on all sides for unit to unit tolerances.

All specifications are accurate at the time of printing. Rotel reserves the right to make improvements without notice.

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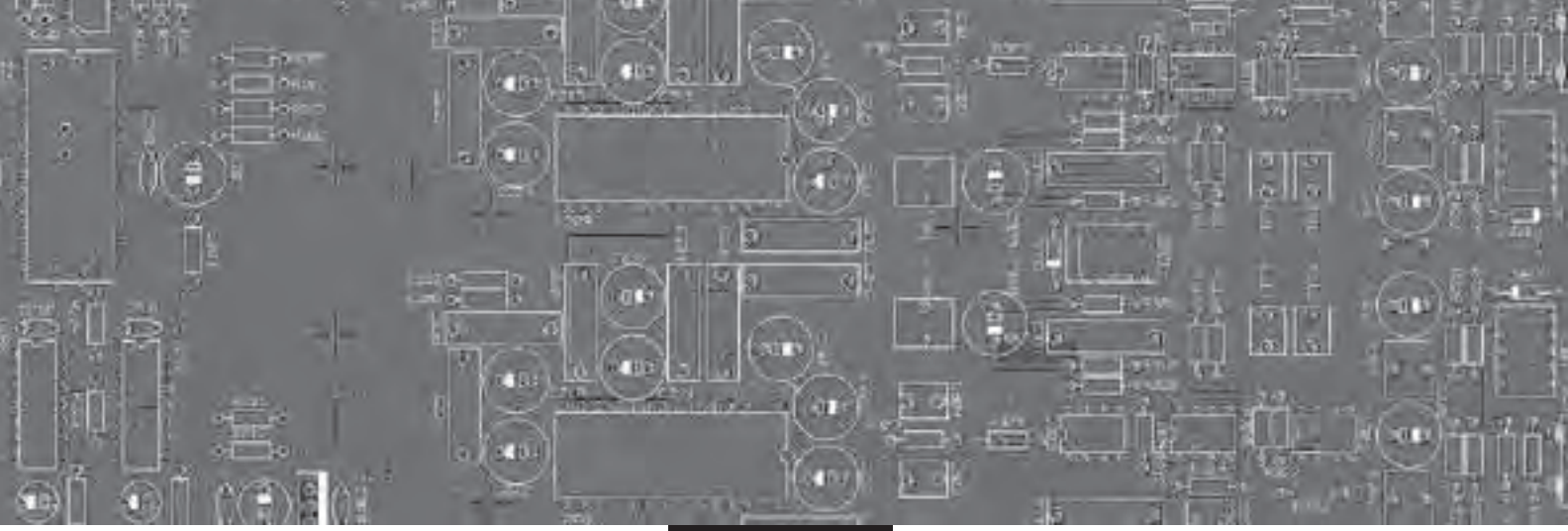

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